



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
OSB1999-0265

September 28, 1999

Karen Kochenbach
U.S. Army Corps of Engineers
Portland District, CENWP-CO-GP
P.O. Box 2946
Portland, OR 97208-2946

Re: Consultation on the Effects of Stream Dredging in Coos County, Oregon (Permit ID Nos. 97-1241 and 98-1041) on Oregon Coast Coho Salmon

Dear Ms. Kochenbach:

This concludes our formal consultation regarding the effects on Oregon Coast (OC) coho salmon from issuance of Section 404 permits to excavate sediment from Mettman Creek (Permit ID No. 97-1241) and Ross Slough (Permit ID No. 98-1041), in Coos County, Oregon. The permit applicants, Daniel Varoujean and Catching Slough Inlet Drainage District, respectively, proposed to conduct the proposed actions for a five-year period beginning in the autumn of 1999.

The OC coho salmon was listed by the National Marine Fisheries Service (NMFS) under the Endangered Species Act (ESA) as threatened on August 10, 1998 (63 FR 42587) and critical habitat for this species was proposed on May 10, 1999 (64 FR 24998). This consultation is undertaken under section 7(a)(2) of the ESA and its implementing regulations, 50 CFR Part 402.

On September 25, 1998, the National Marine Fisheries Service (NMFS) received letters from the Portland District Army Corps of Engineers (COE) for ESA Section 7 informal consultation on the proposed issuance of Clean Water Act Section 404 permits for two actions. The applicants for these permits propose to excavate sediment (sand and silt) from Mettman Creek and Ross Slough (tributaries of Coos Bay, Coos County, Oregon) and to spread the sediment upon adjacent pasture land. The activities are proposed in an attempt to reduce flooding of the pastures through maintenance of the flow capacity of the waterways. The COE proposed conditions on the permits that would lessen the adverse effects of the proposed actions on aquatic organisms and proposed that the permits be in force for 5 years.

In the September 25, 1998 letters, the COE determined that the OC coho salmon may occur within the project area, which has been proposed as critical habitat for this species. The COE also determined that this species may be affected by the proposed projects but that the species would not be adversely affected. In a November 4, 1998 letter to the COE, the NMFS declined to

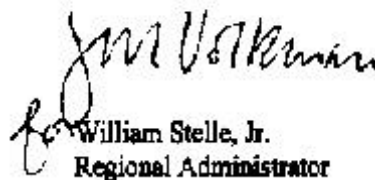


concur with the COE's not likely to adversely affect determination, citing the likelihood of direct injury to individual OC coho salmon and damage to OC coho salmon habitat. The NMFS also noted in the November 4 letter that the COE had agreed to enter formal consultation on the issuance of both permits. On December 21, 1998, NMFS staff attended a meeting (to which COE staff was invited, but was unable to attend) to discuss the possible conditions for Oregon Division of State Lands permits for sediment removal in channelized streams behind tidegates with the representatives of several Oregon agencies. NMFS staff have not been able to keep up with the considerable project work load associated with new listings in Oregon, and regretfully, this project has been delayed for several months. We realize that the subject consultation is of substantial importance, and apologize for any inconvenience our delay in concluding the consultation may have caused the COE or the permit applicants.

The enclosed biological opinion authorizes the incidental take of OC coho salmon that may be caused by these actions, provided that the terms and conditions (T&C) of the incidental take statement (ITS) are met. Please note that T&C No. 3 limits the duration of the ITS to one year. NMFS would like to explore alternative approaches to stream dredging in diked, formerly tidal wetlands that would allow for some recovery of properly functioning habitat conditions. This issue is addressed in our conservation recommendations.

If you have any questions regarding this opinion, please contact Dan Kenney, Fishery Biologist, Oregon State Branch Office, at (541) 957-3385.

Sincerely,



William Stelle, Jr.
Regional Administrator

cc: Eric Metz, Oregon Division of State Lands
Jim Muck, Oregon Department of Fish and Wildlife
Steve Wille, U.S. Fish and Wildlife Service

Endangered Species Act - Section 7
Consultation

BIOLOGICAL OPINION

Coos County Stream Dredging, Permit ID Nos.
97-1241 and 98-1041

Agency: Army Corps of Engineers, Portland District

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region

Date Issued: September 28, 1999

Refer to: OSB1999-0265

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I. Background

On September 25, 1998, the National Marine Fisheries Service (NMFS) received letters from the Portland District Army Corps of Engineers (COE) for Endangered Species Act (ESA) Section 7 informal consultation on the proposed issuance of Clean Water Act Section 404 permits for two actions. The applicants for these permits, Catching Slough Inlet Drainage District (COE No. 98-1041), and Daniel H. Varoujean (COE No. 97-1241), respectively, propose to excavate sediment (sand and silt) from Ross Slough and Mettman Creek (tributaries of Coos Bay, Coos County, Oregon) and to spread the sediment upon adjacent pasture land. The activities are proposed in an attempt to reduce flooding of the pastures through maintenance of the flow capacity of the waterways. The permits would be in force for 5 years and the COE proposed conditions on the permits that would lessen the adverse effects of the proposed actions on aquatic organisms.

In the September 25, 1998 letters, the COE determined that the Oregon Coast coho salmon (*Oncorhynchus kisutch*), listed as threatened under the ESA, may occur within the project area, which has been proposed as critical habitat for this species. The COE also determined that this species may be affected by the proposed projects, but that the species would not be adversely affected. In a November 4, 1998, letter to the COE, the NMFS did not concur with the COE's not likely to adversely affect determination, citing the likelihood of direct injury to individual Oregon Coast (OC) coho salmon and damage to OC coho salmon habitat. The NMFS also noted in the November 4 letter that the COE had agreed to enter formal consultation on the issuance of both permits. On December 21, 1998, NMFS staff attended a meeting (to which the COE was invited, but was not able to attend) to discuss the possible conditions for Oregon Division of State Lands (DSL) permits for sediment removal in channelized streams behind tidegates with the representatives of several Oregon agencies. NMFS staff was delayed in completing the subject consultation during much of the interim period because of the need to provide litigation support to the Department of Justice and previously initiated formal consultations with other Federal agencies. To complete this formal consultation, the NMFS has prepared this Biological Opinion (BO) to address impacts to OC coho salmon as a result of the proposed projects.

Both Ross Slough and Mettman Creek are highly modified streams. Some or all of the lower portions of the areas of Ross Slough and Mettman Creek proposed for dredging likely were tidal waterways prior to the construction of tidegates in the late 19th or early 20th centuries (Arnsberg *et al.* 1997). The channels of both streams have also been moved, elevated, straightened, and dredged in order to facilitate agricultural activities. The applicants believe that maintenance of the current modified conditions of the stream reaches at issue provides flood-control benefits, but the NMFS suspects that this approach may actually exacerbate flooding impacts.

The objective of this BO is to determine whether the proposed dredging in Ross Slough and Mettman Creek is likely to jeopardize the continued existence of OC coho salmon or destroy or adversely modify proposed critical habitat.

II. Proposed Actions

The proposed actions involve the removal of up to 4,200 cubic yards (cy) of sediment from 4,200 linear feet of Ross Slough over a five-year period and the removal of up to 2,050 cy of sediment from 6,150 linear feet of Mettman Creek over a five-year period. The COE would require the applicants to conduct the dredging in a manner which would minimize impacts to aquatic organisms and their habitat, including: (1) Requiring work only within the summer in-water work period when stream flows should be low; (2) requiring the use of land-based equipment for sediment removal and from only one side of the channel; (3) requiring the minimization of woody vegetation removal; (4) requiring the removal only of recently deposited sediment (i.e., no widening or deepening of the channel); and (5) requiring the limitation of dredging to a single pass per channel segment over the five-year life of the permit.

III. Biological Information and Critical Habitat

Based on migratory timing and discussions with a local Oregon Department of Fish and Wildlife (ODFW) biologist, the NMFS expects that some juvenile OC coho salmon would likely be present in the proposed work areas of Ross Slough and especially Mettman Creek during the proposed in-water work period, but that no adult OC coho salmon would be present. Both streams are known to support spawning populations of OC coho salmon, but spawning areas should be upstream of the subject reaches in areas of higher gradient and more coarse substrate. Thus, the subject reaches of Catching Slough and Mettman Creek serve as adult and juvenile migratory corridors for OC coho salmon as well as juvenile rearing areas. Low gradient, upper estuary streams tributary to Coos Bay are also known to support rearing OC coho salmon parr during the winter and OC coho salmon have been shown to use flooded pasture areas in at least one Coos Bay tributary (Tom Nicholson, Fishery Research Biologist, ODFW, pers. comm., August 20, 1999). The proposed actions would occur within proposed critical habitat.

The action area is defined by NMFS' regulations (50 CFR Part 402) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The action area includes proposed critical habitat affected by the proposed actions within Ross Slough at creek mile 2.0 to 3.0 and the remainder of Ross Slough to its confluence with Catching Slough; and Mettman Creek at about creek mile 0 (at its confluence with Kentuck Slough) to mile 1.1. Essential features of the adult and juvenile migratory corridor for the species are: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food (juvenile only), (8) riparian vegetation, (9) space, and (10) safe passage conditions (50 CFR Part 226). The proposed projects may affect each of the essential features, either through the direct effect of the dredging or through the indirect effect of maintenance of the existing degraded habitat conditions.

OC coho salmon were listed by the NMFS under the ESA as threatened on August 10, 1998, and critical habitat for this species was proposed on May 10, 1999. References for further background on listing status, biological information and critical habitat elements can be found in 60 FR 38011, 63 FR 42587, 64 FR 24998, and Weitkamp *et al.* (1995).

IV. Evaluating Proposed Actions

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NMFS must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of (1) defining the biological requirements of the listed species, and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributable to (1) collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize listed species, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' critical habitat. The NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. The NMFS identifies those effects of the action that impair the function of any essential feature of critical habitat. The NMFS then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will adversely modify critical habitat, it must identify any reasonable and prudent measures available.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential elements necessary for migration, spawning, and rearing of the listed and proposed species under the existing environmental baseline.

A. Biological Requirements

The first step in the methods NMFS uses for applying the ESA section 7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NMFS starts with the determinations made in its decision to list the species for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for OC coho salmon to survive and recover to a naturally reproducing population level at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance its capacity to adapt to various environmental conditions, and allow it to become self-sustaining in the natural environment.

For this consultation, the biological requirements are habitat characteristics that function to support successful rearing and migration. The current status of the OC coho salmon, based upon their risk of extinction, has not significantly improved since the species was listed.

B. Environmental Baseline

The biological requirements of OC coho salmon are currently not being met under the environmental baseline. Their status is such that there must be a significant improvement in the environmental conditions they experience over those currently available under the environmental baseline. Any further degradation of these conditions would have a significant impact due to the amount of risk they presently face under the environmental baseline.

The defined action area is the area that is directly and indirectly affected. The direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed where actions described in this opinion lead to additional activities or affect ecological functions contributing to stream degradation. For the purposes of this opinion, the action area is defined as Catching Slough to its confluence with Ross Slough and Mettman Creek to its confluence with Kentuck Slough. Other areas of the Coos Bay watershed are not expected to be directly or indirectly impacted.

V. Analysis of Effects

A. Effects of Proposed Actions

The NMFS expects that the effects of the proposed projects will tend to maintain the habitat elements at the subject sites over the long-term (greater than one year). In the short term, temporary increases of sediment and turbidity and disturbance of riparian habitat are expected.

While the proposed projects will likely maintain the currently degraded habitat conditions at the sites in the long-term, the subject stream reaches likely have the potential to provide substantially more rearing habitat for OC coho salmon than currently exists. Although the COE's conditions should ensure that the stream banks and bed are not directly widened or deepened and that the streams are not directly straightened, the loss of accumulated sediment will likely indirectly affect future stream morphology and hence the quality of habitat for OC coho salmon. This is because, as described below, the transport/accumulation of sediment is a key component of stream morphology and the removal of accumulated sediment would likely prolong the re-establishment of properly functioning habitat conditions for coho salmon as characterized by a meandering, complex channel and associated riparian zone.

The applicants seek to dredge the subject stream reaches in order to reduce flooding of livestock pastures. While it is likely that upstream forestry and agricultural practices have increased the volume of sediment in the streams, it is also likely that the modifications to the stream channels to facilitate agricultural development of the stream floodplains (straightening, relocation, and dredging) have also exacerbated flooding. This is because the straightened channels are hydraulically inefficient in transporting sediment compared to naturally meandering channels (Rosgen 1996). As sediment aggrades in a straightened channel, the cross-sectional area of the channel is diminished and therefore the capacity of the channel to contain high flows is lessened. Because the stream channels have been relocated (in large part) to the margins of their floodplains (at a relatively high elevation), water overflows into the center portions of the floodplains (at a relatively low elevation) when channel capacity is exceeded. Levees that have been constructed over the years to confine the stream channels to the margins of the original floodplains are likely to be only temporarily and partially effective because sediment also accumulates within the confines of the levees. Thus, unless removed, the sediment which accumulates within straightened channels and the perched, levee-formed artificial floodplains displaces water which then affects the utility of the pastures for the applicants' intended agricultural purposes during much of the year.

Although the natural condition of much of the project area is tidal wetland, floodgates prevent regular tidal inundation. Assuming, however, that the tidegates continue to function but that no further dredging, straightening, or levee construction occurs, the accumulation of sediment in the subject streams would

eventually lead to more meandering and complex stream channels. This is because the existing channels would continue to overflow and, because of gravity, seek the lowest portion of their floodplains. In this process, levees would be eroded, and new channels would form, eventually completely abandoning the upland valley-margins. No longer confined by levees, the new channels would react to accumulations of sediment by deepening, moving laterally, and eventually forming meanders. Such a stream would likely include numerous habitat types, including deep, slow pools; shallow, relatively fast riffles, and off-channel high water velocity refuge. When a relative equilibrium is reached in channel sinuosity, based substantially on sediment supply and valley gradient (Rosgen 1996), and if protected from livestock, the streambanks should support substantial woody vegetation.

Summary of Specific Effects:

1. In-water work within Ross Slough and Mettman Creek could result in the disturbance of OC coho salmon through turbidity, noise, and contact (or near-contact) with excavation equipment. Juvenile fish that may be rearing in the vicinity of the action area would most likely be displaced, although warm summer water temperatures may lessen or preclude fish presence during the in-water work period. There is a low probability of direct mortality because the turbidity should be localized and brief, and because the fish should be aware and agile enough to avoid entrapment by excavation equipment.
2. Up to approximately 10,350 linear feet of rearing habitat—the stream channel, and to a lesser extent, the bank and associated vegetation—would be altered as a result of the excavation. The principal aspect of the instream habitat that would be altered, however, would be the quantity of predominantly sandy sediment, the removal of which is unlikely to have adverse long-term direct effects because substantial sandy sediment will remain and will continue to accumulate and because unconsolidated sand is fairly low quality substrate for OC coho salmon and its prey species (McMahon 1983). The removal of riparian vegetation would have little effect on stream temperatures and recruitment of large woody material because little substantial woody vegetation is currently present.
3. The long-term indirect effect of the removal of sediment from the Ross Slough and Mettman Creek channel would be delay or prevention of the potential re-establishment of a meandering, valley bottom channel which would likely provide properly functioning habitat for OC coho salmon of superior quantity and quality than currently exists in the action area.

B. Effects on Critical Habitat

The NMFS designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water

quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Critical habitat has been proposed for the OC coho salmon. For the proposed action, NMFS expects that the effects will tend to maintain conditions in the watershed under current baseline conditions over the long term. The existing channel edge provides relatively poor habitat for juvenile salmon in the summer because of the lack of overhead cover and high summer temperatures and in the winter because of a lack of velocity shelter.

C. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." For the purposes of this analysis, the general action areas are the applicants' properties. Other activities within the watershed have the potential to impact fish and habitat within the action area. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes.

NMFS is not aware of any significant change in non-Federal activities that are reasonably certain to occur. NMFS assumes that future private and State actions will continue at similar intensities as in recent years.

VI. Conclusion

The NMFS has determined, based on the available information, that the proposed actions are expected to maintain current stream conditions within the action area. Consequently, the proposed actions covered in this BO are not likely to jeopardize the continued existence of OC coho salmon or adversely modify proposed critical habitat. When analyzing the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects, NMFS used the best available scientific and commercial data to apply its jeopardy analysis. NMFS believes that the proposed action would cause minor, short-term degradation of anadromous salmonid habitat due to in-water excavation. Although direct mortality from this project could occur during the in-water work, it is not expected and the level of mortality would be minimal and would not result in jeopardy.

VII. Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse

effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. NMFS believes the following conservation recommendations are consistent with these obligations and therefore should be implemented by the COE:

1. The COE should work with the DSL to encourage steps by landowners to restore former or existing degraded tidal and near-tidal stream channels and wetlands. When direct on-site restoration by individual landowners is not practical or possible, the COE should condition actions which adversely alter degraded stream channels and wetlands so that restoration or enhancement of comparable amounts of off-site tidal or near-tidal stream channels and wetlands is required. Possible on-site and off-site measures, used singly or in combination, include:
 - a. Removal or modification of tidegates. Prior to the construction of tidegates, tidal wetlands were subject to regular inundation which allowed the exchange of nutrients. If tidegates cannot be removed, fish passage benefits may be gained through replacement of existing gates with ones of lighter construction (such as aluminum) which would allow the gates to be open for longer periods of time.
 - b. Enrollment of acreage in the U.S. Department of Agriculture's Conservation Reserve Enhancement Program (CREP) or Wetlands Reserve Program, participation in the Oregon Coastal Salmon Initiative, and/or projects through local watershed councils or other Federal, state, and local programs which provide monetary or other incentives to agricultural landowners to protect and/or restore wetlands and other high-value fish and wildlife habitat.
 - c. Restoration of stream meanders and/or construction of setback levees. Because of their location and decreased sediment transport, streams which have been straightened and are confined by adjacent levees to the relatively high-elevation margins of floodplains are prone to overtopping into the lower-elevation areas of the floodplains where the streams once meandered. The restoration of meandering stream channels in the lower-elevation portions of the floodplains would likely restore substantial OC coho salmon habitat and may even minimize the amount of pasture land typically flooded. Another alternative may be to construct new levees to exclude the stream channels from much of the floodplain, but to build the levees a substantial distance away from the existing or reconfigured stream channels so as to allow space for the streams to meander within the new "floodplain." Even without direct stream channel manipulation, over time, better-functioning instream and off-channel OC coho salmon habitat should

develop, especially if riparian vegetation is planted, maintained and protected. In addition to the benefit to OC coho salmon habitat, the setback levees should better confine flooding (likely resulting in dryer pastures), while the setback levees and the new “floodplains” would be available for grazing much of the year.

VIII. Reinitiation of Consultation

Consultation must be reinitiated if: (1) The amount or extent of taking specified in the Incidental Take Statement is exceeded or is expected to be exceeded; (2) new information reveals effects of the actions may affect listed species in a way not previously considered; (3) the actions are modified in a way that causes an effect on listed species that was not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the actions (50 CFR 402.16). To re-initiate consultation, the COE must contact the NMFS Habitat Conservation Division, Oregon Branch Office.

IX. References

- Arnsberg, A.J., L.E. Biado, R.J. Cowlishaw, C. Cziesla, A.K. Decker, E.M. Emmons, J. L. Lymp, E. Sather, L.E. Yager, and P.F. McDowell. 1997. Landscape changes through time: a historical reconstruction of four watersheds of Coos Bay, Oregon. Oregon Institute of Marine Biology, Charleston, Oregon.
- McMahon, T.E. 1983. Habitat suitability index models: coho salmon. U.S. Fish and Wildlife Service, Western Energy and Land Use Team, Fort Collins, Colorado.
- Rosgen, D. 1996. Applied river morphology. Wildland Hydrology, Pagosa Springs, Colorado.
- Weitkamp, L.A., T.C. Wainwright, G.J. Bryant, G.B. Milner, D.J. Teel, R.G. Kope, and R.S. Waples. 1995. Status review of coho salmon from Washington, Oregon, and California. National Marine Fisheries Service, Northwest Fisheries Science Center, Seattle, Washington.

X. Incidental Take Statement

Sections 4 (d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not

limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

A. Amount or Extent of the Take

The NMFS anticipates that the action covered by this biological opinion has more than a negligible likelihood of resulting in incidental take of OC coho salmon because of detrimental effects from increased sediment levels (non-lethal) and the potential for direct incidental take during in-water work (lethal and non-lethal). Effects of actions such as these are largely unquantifiable in the short term and are not expected to be measurable as long-term effects on habitat or population levels. Therefore, even though NMFS expects some low level incidental take to occur due to the actions covered by this biological opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species itself. In instances such as these, the NMFS designates the expected level of take as unquantifiable. Based on the information in the BA, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions covered by this biological opinion. The extent of the take is expected to be limited to the action area.

B. Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to avoid or minimize take of OC coho.

1. To minimize the amount and extent of incidental take from dredging activities, measures shall be taken to: Limit the duration of in-water work and time such work to occur when listed fish are few or absent; and implement effective pollution control measures to minimize the movement of soils and sediment both into and within the stream channel.
2. To minimize the amount and extent of take from loss of habitat and to minimize impacts to critical habitat, measures shall be taken to minimize impacts to instream and riparian habitat, or where impacts are unavoidable, to replace lost riparian and instream habitat function.

3. To minimize the long-term impact of maintenance of current habitat conditions, measures shall be taken to allow the development of more effective and long-term methods of pasture drainage and habitat enhancement.

C. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the COE must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

- 1a. All work below the ordinary high water line will be completed within ODFW's in-water work period. Any extensions of the in-water work period will first be approved by and coordinated with ODFW and NMFS.
- 1b. All terms and conditions of the COE's permit, including those relating to sedimentation, turbidity, and introduction of contaminants, shall be followed.
- 2a. Access by dredging equipment shall be limited to areas currently without significant woody vegetation, unless both streambanks of a stream reach to be dredged currently support such vegetation. If both streambanks support such vegetation, dredging shall be conducted in such a manner to minimize the damage to the vegetation. No large woody material (largest stem > 2 inches in diameter) shall be removed from the creek channel.
- 2b. On the streambank opposite from the access sites for dredging equipment, willow cuttings shall be placed on 2-foot centers for a linear distance no less than the linear distance dredged. The cuttings shall be maintained and/or replaced annually for a five year period to ensure that a minimum of 80% of the cuttings survive to enhance riparian conditions.
- 3a. The term of the permit shall be limited to one year.